

DRAFT 2013 LOCAL COASTAL PROGRAM AMENDMENT

NEW HAZARDS SECTION

MAY 2, 2013

HAZARDS

INTRODUCTION

Section 30253 (New Development) of the Coastal Act provides policies intended to reduce hazard-related risks to new development located in the coastal zone. These policies indicate that new development shall:

- (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
- (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural conditions along bluffs and cliffs.

The intent of these policies are to safeguard lives and property when planning for new development in high hazard areas, assure that new development does not significantly contribute to the deterioration of the general area of the proposed development, and prohibit construction of protective devices which would "...substantially alter natural landforms along bluffs and cliffs."

LOCAL RESOURCES AND ISSUES

Natural hazards may affect the City of Santa Barbara's coastal zone and have the potential to threaten the health, safety, and welfare of local residents. These hazards include geologic and seismic conditions, fire and flooding. Human-caused hazards that may adversely affect residents and properties in the coastal zone include hazardous materials and public safety-related hazards. Specific hazards that have the potential to occur in the coastal zone include:

Geologic and Seismic Hazards

Hazards associated with geologic and seismic conditions in the coastal zone include:

- (1) Fault Rupture
- (2) Ground Shaking
- (3) Liquefaction
- (4) Tsunami
- (5) Seiche
- (6) Landslides
- (7) Sea Cliff Retreat
- (8) Soil Erosion
- (9) Expansive Soil

(10) Radon

(11) High Groundwater

Fire Hazards

Fire hazards in the coastal zone include:

(1) Wildland fires

(2) Structure fires

Flooding Hazards

Flooding hazards that may affect the coastal zone include:

(1) Stream flooding

(2) Dam failure

(2) Coastal flooding and inundation

Hazardous Materials

Sources of hazards materials that may occur in the coastal zone include:

(1) Household hazardous materials and wastes

(2) Pharmaceuticals

(3) Leaking underground storage tanks

Public Safety

Public safety-related hazards that may affect the coastal zone include:

(1) Aircraft operations at the Santa Barbara Municipal Airport

(2) Hazardous material transportation

(3) Natural gas pipelines

(4) Electromagnetic fields

The areas within the City's coastal zone that are most likely to be affected by natural- and human-caused hazards are summarized in Table 10.. The areas of the City that correspond with the coastal zone components identified on Table 10 were identified by the City's 2013 Safety Element Update as having a high potential for the identified hazard to occur; are known to have experienced the effects of a specific hazard; or contain conditions that would make it possible for the hazard to occur in the future. For a more detailed description of a hazard's potential effects; locations in the City that may be affected; and measures that have been implemented to reduce the hazard-related effects, the reader is directed to the 2013 Safety Element Update and the Safety Element Technical Background Report, which is an Appendix to the Safety Element.

Draft 2013 Local Coastal Program Amendment
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TABLE 10 Coastal Zone Hazards

Hazard	Coastal Zone Component								
	1	2	3	4	5	6	7	8	9
Geologic and Seismic									
Fault Rupture			•					•	•
Ground Shaking	•	•	•	•	•	•	•	•	•
Liquefaction			•	•	•	•		•	•
Tsunami	•	•		•	•	•		•	•
Seiche								•	
Landslides	•	•				•			
Sea Cliff Retreat	•	•				•			
Soil Erosion	•	•	•			•		•	
Expansive Soil	•	•	•	•	•	•	•	•	•
Radon			•					•	
High Groundwater	•		•	•	•	•		•	•
Fire									
Wildland Fire	•						•		
Structure Fire	•	•	•	•	•	•	•	•	•
Flooding									
Stream Flooding			•	•	•	•	•	•	•
Dam Failure									
Coastal Flooding and Inundation			•	•	•	•		•	•
Hazardous Materials									
Household Hazardous Materials	•	•	•	•	•	•	•	•	
Pharmaceuticals	•	•	•	•	•	•	•	•	
Leaking Underground Tanks		•	•	•				•	•
Public Safety									
Aircraft Operations									•
Hazardous Material Transportation				•	•	•	•		
Natural Gas Pipelines			•			•	•	•	•
Electromagnetic Fields									

- Indicates that a hazard exists or has a high potential to exist.

COMMUNITY RESILIENCE

An objective of implementing hazard-related risk reduction measures and planning for effective post-disaster response is to facilitate the rapid recovery of the community after a disaster occurs. The combined benefits of minimizing risk and pre-disaster planning are often referred to as “resiliency planning” and can reduce the effects of natural and other hazards in terms of injury and loss of life, property damage, and loss of natural and economic resources. Communities that actively engage in hazard and resiliency planning will likely be less seriously affected by a disaster, will recover faster when disasters occur, and endure less economic hardship than those communities that do not engage in planning-related efforts.

Resiliency planning promotes recovery from the short- and long-term effects of natural disasters such as earthquakes, floods and fires. The principles of resiliency planning may also be applied to hazards that have not yet affected the community, such as the potential for a substantial rise in sea level.

Resiliency requires having a well-prepared community and good response actions by local government. Local police, fire, emergency medical services, emergency management, public health and medical providers, public works, and other community agencies are generally the first to respond to an emergency or disaster and to provide assistance to the community. Education of the public is also an important component of efforts to create a more resilient community, and those efforts should focus on increasing the public’s awareness of risk levels and specific hazards, and providing guidance on how to be self-reliant after a major disaster. The City’s Office of Emergency Services (OES) conducts a variety of public education and disaster preparedness programs. The City recently adopted a *Climate Action Plan* (2012) that outlines a variety of measures that would reduce risk to residents and important infrastructure resulting from climate change-related effects such as a substantial rise in sea level.

GEOLOGIC AND SEISMIC HAZARDS

Fault Rupture

Seismically induced ground rupture is a break or deformation of the ground surface resulting from movement along a fault. There are two major faults located in the City’s coastal zone that present a risk of fault rupture.

1. Mesa Fault. The Mesa fault forms the uplifted “La Mesa” between the Harbor and Arroyo Burro Creek. The fault generally crosses the West Beach neighborhood in a northwesterly direction. The fault is not clearly exposed within the coastal zone. The Mesa fault was previously considered to be a “potentially active” fault, however, recent evaluations of the fault have classified it as being “apparently active.”¹
2. More Ranch Fault. The More Ranch fault is the western segment of the larger Mission Ridge fault system and extends east-west for approximately 10 miles

¹ The State Mining and Geology Board defines an active fault as one which has had surface displacement within Holocene time (about the last 11,000 years). Potentially active faults show evidence of surface displacement during the last two million years.

near the coast south of Goleta, and across the southern end of the north-south runway at the Santa Barbara Municipal Airport. The More Ranch fault is considered to be an “apparently active” fault.

The location of the Mesa and More Ranch faults are depicted on Figure 2, Geology, of the Safety Element Technical Background Report.

Ground Shaking

Santa Barbara’s entire coastal zone could be affected by ground shaking occurring from fault movement along a local fault or a major distant fault. The severity of damage caused by ground shaking is controlled by many factors, including the magnitude of the earthquake, the distance to the location where the fault movement occurred, how long the ground shakes and the speed at which it shakes, local geologic conditions, and the design of affected buildings and structures.

Liquefaction

Liquefaction is a temporary loss of soil strength that can occur during moderate to large earthquakes. Areas with shallow groundwater, granular and unconsolidated soils generally have a higher risk for liquefaction to occur. Areas in the City’s coastal zone that were formerly an estero that was filled in the 1920’s and 1930’s have a high potential to experience liquefaction during a major earthquake. The Airport area, which was formed by filling portions of the Goleta Slough, also has a high liquefaction potential. The specific areas that could be potentially affected by this hazard are illustrated on Figure 9, Potential Liquefaction Hazard Zones, of the Safety Element Technical Background Report.

Tsunami

A tsunami is a series of waves generated by a vertical displacement of the ocean floor, most commonly as a result of earthquake-related faulting. To assist local jurisdictions with tsunami hazard evacuation planning efforts, maps depicting areas of the City that could be affected by tsunami wave inundation have been prepared by the University of Southern California Tsunami Research Center. Potential inundation areas were identified by evaluating local bathymetry and local and distant sources that could generate a tsunami.

Areas of the City’s coastal zone that could be affected by a tsunami are depicted on Figure 11, Potential Tsunami Hazard Zones, of the Safety Element Technical Background Report. Potentially affected areas are low-lying parts of the City generally located south of the U.S. 101 freeway in the East Beach, Waterfront and West Beach neighborhoods. Other coastal zone areas that could be affected by tsunami wave inundation include the intersection of Cliff Drive and Las Positas Road in the western end of the West Mesa neighborhood, and the Airport area.

Santa Barbara was designated as a TsunamiReady™ community in 2012. To be recognized as TsunamiReady, communities must have a 24-hour warning system, have more than one method to receive tsunami warnings and to alert the public, promote public readiness, and develop a tsunami response plan.

Seiche

A seiche (pronounced saysh) is a wave or series of waves in an enclosed or semi-enclosed body

of water that can be generated by earthquake-related groundshaking, a landslide into the water body, wind, or a tsunami. If the seiche wave overtops the edge of the water body it can run up onto adjacent land areas and result in property damage. The Harbor and adjacent areas are susceptible to a seiche hazard.

Landslides

Landslides occur on sloping ground when the weight of the material that comprises the slope and the weight of objects placed on the slope (driving forces) exceed the shear strength of the slope material (resisting forces). The stability of a slope, or the potential for slope movement to occur, is dependent on many factors, including: the height and steepness of the slope, the shear strength of rock and/or soil that comprises the slope, the orientation of bedding planes in underlying geologic formations, and the amount of water contained in the slope material.

The down-slope movement of earth material is part of a continuous process of erosion, however, the stability of a slope can be adversely affected by a wide variety of factors. Changes to the stability of a slope can be caused by erosion of the toe of a slope, placing additional weight on the slope, adding water to the slope, changes to the slope's configuration by grading, earthquake-related groundshaking, or removal of vegetation from the surface of the slope.

Areas of the City's coastal zone identified as having a high potential to experience landslides include the ocean bluffs that form the southern edge of the Mesa neighborhoods, and the bluffs located south of the Andre Clark bird refuge. Figure 13, Slope Failure Hazard Zones, of the Safety Element Technical Background Report depicts the locations in the coastal zone that have a high slope failure potential.

Seacliff Retreat

Sea cliff retreat is an erosion- and landslide-related hazard that affects the ocean bluffs located along the City's coast, and is a continual, natural process caused by both marine and terrestrial erosion process that causes the face of the bluff to "retreat," or move landward. Ocean bluffs may appear to go unchanged for many years as erosion of the cliff may occur slowly. Conversely, extensive losses of bluff material may occur suddenly due to large landslides that occur when the stability of the slope is adversely changed.

Rates of sea cliff retreat can be delayed or accelerated by human actions. Seawalls and revetments can slow sea cliff retreat at a specific site, but can also result in increased beach sand erosion and accelerated bluff erosion adjacent to the protective structure. Increases in the amount of water that infiltrates into the bluff by rainfall, irrigation, septic tanks or changes in drainage patterns can also increase the rate of cliff erosion. Other actions that can increase the rate of bluff retreat include adding structures (weight) to the top of the bluff, the construction and use of pathways on the cliff face, and planting vegetation with shallow roots or that becomes heavy and can pull soil away from the cliff face.

There are approximately four miles of coastal bluffs within the City's coastal zone, including the cliffs that form the southern portion of the West Mesa and East Mesa neighborhoods, and the cliffs adjacent to the Clark Estate and the Santa Barbara Cemetery in the East Beach neighborhood. Most to the sea cliffs in the City are comprised of Monterey shale that is capped

by unconsolidated marine terrace deposits. The shale is often comprised of thin beds that can vary in structure and composition, and that have been folded, fractured and tilted. The potential for slope failure can be substantially increased when bedding planes dip (tilt) toward the beach at an angle that is less steep than the sea cliff face.

Several different studies of sea cliff retreat rates have been conducted in the Santa Barbara area. One study evaluated coastal erosion rates over a 70-year period and determined that the highest retreat rate was approximately 12 inches per year, while the average erosion rate was eight inches per year. The *City of Santa Barbara Sea Level Rise Vulnerability Study* (Griggs, 2012) reports that based on a review of historical aerial photographs, average long-term sea cliff retreat rates in Santa Barbara ranged between six and 12 inches per year.

Another study compared cliff edge positions on aerial photographs from the 1930's with LiDAR² data from 1998. That study identified average sea cliff retreat rates of about four to 18 inches per year for cliffs adjacent to the West and East Mesa neighborhoods, and just under six inches per year for the cliffs adjacent to the Clark Estate/Santa Barbara Cemetery in the East Beach neighborhood. Although there can be a wide variation in the rate of retreat at individual sites and bluff retreat generally occurs in an episodic manner, the average rate of retreat for the Santa Barbara bluffs when measured over an extended period of time is about six to 12 inches per year. At that average rate, the City's ocean bluffs can be expected to retreat by approximately 10-20 feet over the next 20 years, and approximately 45 to 90 feet by 2100.

An expected consequence of climate change caused by increasing concentrations of greenhouse gases in the Earth's atmosphere is a rise in sea level. As sea level rises, ocean bluffs will be more vulnerable to wave-related erosion, which will likely result in an increase in existing sea cliff retreat rates. Changes in climatic conditions may result in an increase in the frequency and severity of storms, and an increase in the height of waves as they approach the shore. Such changes to ocean conditions will result in increased ocean bluff erosion by storm waves. Although there is substantial variation in predictions of future increases in sea level, particularly for conditions between 2050 and 2100, it is reasonably expected that the combination of increased sea levels and storm severity will lead to increased rates of erosion at the coastline.

A variety of measures may be implemented to minimize the potential effects of sea cliff retreat/slope stability impacts on new development. While specific measures should be identified by a site-specific evaluation, general measures include controlling site drainage to minimize the infiltration of stormwater into subsurface materials, minimizing the application of landscape water, and avoiding the use of septic systems. Structure foundations and design elements should extend to suitable depths, and be of appropriate strength to not be compromised and to support the structure in the event of bluff failure or if retreat encroaches upon the foundation of the structure.

Soil Erosion

² LiDAR is an acronym for Light Detection and Ranging. This system uses a narrow laser beam to map physical features with very high resolution.

Soil erosion occurs when wind, water or ground disturbances cause soil particles to move and be deposited elsewhere. Numerous conditions will influence the susceptibility of soil to the effects of erosion, although the characteristics of the soil, vegetative cover and topography are important factors. Areas of the City's coastal zone that have soils and other condition that may contribute to a high soil erosion hazard are depicted on Figure 15, Erosion Potential Hazard Zones, of the Safety Element Technical Background Report.

Expansive Soil

Expansive soils will expand when wet and shrink when they become dry. Repeated cycles of shrinking and swelling can cause building foundations, walls, ceilings and floors to crack, and windows and doors to warp so that they do not function properly. Differential shrinking and swelling can also damage surface improvements such as roadways and sidewalks. Areas of the City's coastal zone that have a high potential to be affected by expansive soils are depicted on Figure 16, Expansive Soils Hazard Zones, of the Safety Element Technical Background Report.

Radon

Radon is an invisible and odorless radioactive gas that is created as a result of the decay of uranium and thorium that is naturally present in rocks and soils. Breathing air with elevated levels of radon gas can result in an increased risk of developing lung cancer. While all buildings have some potential for elevated radon levels, buildings located on rocks and soil containing elevated levels of uranium or thorium will have a greater likelihood of having elevated radon concentrations. Areas of the City's coastal zone that have a high potential to be affected by elevated concentrations of radon are depicted on Figure 17, Radon Hazard Zones, of the Safety Element Technical Background Report.

High Groundwater

High groundwater or near-surface groundwater is a hazard that can vary over time in response to climatic conditions, and can have an adverse effect on above- and below-grade structures. Buildings and other facilities in areas with high groundwater can be subjected to moisture intrusion and, in some cases, tremendous buoyancy forces that may push up on the structure. In general, groundwater within 15 feet of ground surface can create a nuisance and can require special structure design to address buoyancy and moisture intrusion. High groundwater can also increase liquefaction and the slope stability hazards. Areas of the City's coastal zone that have a high potential to be affected high groundwater are depicted on Figure 18, Shallow Groundwater Hazard Zones, of the Safety Element Technical Background Report.

FIRE HAZARDS

Wildland Fires

Wildland fires are natural process that can have ecological benefits to the long-term vitality of chaparral and other types of habitat. However, wildland fires can result in adverse effects on the built environment, including the potential for loss of life, damage or destruction of public and private structures, loss of personal property, damage to infrastructure systems, and damage to recreation facilities and open space areas. Wildland fires can also result in the loss of hillside vegetation, which can result in a variety of adverse post-fire effects.

Natural- and development-related conditions can combine to increase the potential for and the severity of wildland fires. These conditions include factors such as vegetation, site-specific climate conditions, topography, access conditions, water supply for fire suppression purposes, and fire department response time. Based on an evaluation of these and other conditions, the Santa Barbara Fire Department has identified areas of the City's coastal zone that have a high wildfire hazard. The identified high fire hazard areas are described as the "Coastal Zone" and the "Coastal Interior Zone."

Areas of the City's coastal zone that have been designated as having a high fire hazard are depicted on Figure 20, High Fire Hazard Zones, of the Safety Element Technical Background Report. The use of the term "Coastal Zone" to describe the designated high fire hazard areas refers to conditions that influence the severity of the fire hazard, such as marine weather patterns and vegetation commonly found in coastal areas. The term is not intended to identify areas subject to the requirements of the Coastal Act.

Numerous regulatory requirements and risk reduction programs to minimize the effects of wildfires have been implemented by the City, county, state and federal agencies. In general, these requirements include standards related to fire prevention and suppression, and making structures more resistant to wildfires. One of the most important wildland fire risk reduction measures implemented by the City are requirements to provide defensible space around structures.

Defensible space generally refers to reducing the amount of vegetative fuel that exists around a building or structure, which increases the probability of it surviving a wildfire. A defensible space perimeter will also provide firefighters with a safer working environment as a fire approaches, and minimizes the chance that a structure fire will escape to surrounding wildland areas. The amount of defensible space required around structures in the "Coastal Zone" high fire hazard area generally ranges between 50 and 70 feet. The amount of defensible space required around structures in the "Coastal Interior Zone" generally ranges between 30 and 50 feet.

Structure Fires

The City of Santa Barbara Fire Department provides fire prevention, suppression and other emergency response services. The Fire Department is also responsible for aircraft emergencies at the Santa Barbara Airport. The risk to life and property resulting from structure fires can be influenced by many factors, including the availability of adequate water supplies; the size, height and construction characteristics of the structure; the type of use occupying the structure and the type of materials that may be present in the building; and the ability to provide adequate emergency ingress and egress. Structures that have the potential to be adversely affected by fire are located throughout the City's coastal zone.

FLOODING

Stream Flooding

Stream flooding occurs when stormwater runoff in a stream channel exceeds the water carrying capacity of the channel, causing water to flow over the stream's banks. Several factors will influence the severity of a flood event, including: rainfall intensity and duration; ground surface permeability; and the geographic characteristics of the watershed, such as its size, shape and slope. The magnitude and severity of flood events may be increased by a variety of natural- and development-related conditions. Natural factors can include the excessive growth of brush and trees within drainage channels, which may obstruct stream flows and result in an increase in floodwater heights.

Fires within the watershed will result in the removal of vegetation that helps to control the amount and rate of stormwater runoff. Urban development often results in an increase in impervious surface areas, which changes the drainage area's storm water runoff characteristics. These effects are referred to as "hydromodification" and can result in increased stormwater runoff volume, velocity, temperature, and discharge duration. Hydromodification can also result in increased erosion and sedimentation, and may also contribute to increases in pollutants in runoff water.

Floods are generally described in term of their frequency of occurrence. For example, a 100-year flood is defined by evaluating the long-term average time period between floods of a certain size, and identifying the size of flood that has a one percent chance of occurring during any given year.

Four major watersheds drain through the City of Santa Barbara to the Pacific Ocean. The creeks that drain those watersheds include Arroyo Burro Creek, Mission Creek, Sycamore Creek and the Laguna Channel. The Arroyo Burro, Mission and Sycamore Creeks originate in the Santa Ynez Mountains and drain areas within the Los Padres National Forest as well as developed areas of the City. The Laguna Channel watershed drains an almost entirely urbanized watershed within the City. The Santa Barbara Municipal Airport is located on low-lying ground within the historic boundaries of the Goleta Slough, and is also in an area where four major creeks are located: San Pedro, Tecolotito, Carneros and Las Vegas Creeks.

The Federal Emergency Management Agency (FEMA) has designated flood hazard zones throughout the City and areas subject to inundation during a 100-year storm are depicted on Flood Insurance Rate Maps. The designated 100-year flood zone areas in the City's coastal zone are generally depicted on Figure 24, 100-Year Floodplains, of the Safety Element Technical Background Report.

Dam Failure

Dam inundation is the flooding of lands due to the release of impounded water resulting from the failure or overtopping of a dam. The Lauro Dam and Reservoir is located north of and adjacent to the City limits and would have the potential to result in inundation impacts to the City should a failure of the dam occur. Water released from the reservoir could eventually enter Mission

Creek and Arroyo Burro Creek, however, within the coastal zone, it is expected that the released water would generally be contained within the established channels of those streams. Since the risk of a dam failure is very low, no areas in the City's coastal zone are considered to have a high risk for this hazard.

Coastal Flooding and Inundation

Coastal flooding refers to a temporary covering of areas on or near the coastline caused by stream flow, high tides, ocean storm conditions or a combination of those processes. Coastal inundation refers a permanent covering of an area by ocean water. A climate change-related rise in sea level would be the source of new inundation-related impacts. Beach and adjacent low-lying areas would be the most susceptible to the effects of coastal inundation.

Coastal flooding in Santa Barbara has generally occurred as a result large, storm-generated ocean waves moving onshore combined with high tide conditions. Figure 25, Coastal Storm Surge Hazard Areas, provided by the Safety Element Technical Background Report depicts areas of the City that could be flooded as a result of storm surge during a 100-year storm under existing sea level conditions. Areas that could be affected by coastal flooding caused by a 100-year storm plus the effects of a climate change-related 55-inch increase in sea level are also depicted on Figure 25 of the Technical Background Report.

Under such possible future conditions, the areas that could be affected by coastal flooding are located substantially further inland than under existing sea level conditions. Although there is a level of uncertainty associated with predicting how sea level rise conditions will affect coastal and inland areas in the future, it is reasonable to expect that impacts resulting from coastal flooding will increase as sea level increases.

The potential for City beaches and adjacent areas to be inundated as a result of a climate change-related increase in sea level will be controlled by factors such as the future rate and magnitude of sea level rise, and the width and elevation of the City's beaches. Projections regarding the possible magnitude of sea level rise vary substantially, however, the *City of Santa Barbara Sea Level Rise Vulnerability Study* concluded that over an intermediate time frame (to 2050) a projected 14-inch rise in sea level would have a low probability of resulting in a permanent loss of City beaches.

If sea levels were to continue to rise, areas that would have formerly only been temporarily flooded or submerged during very high tides and/or large El Nino storms would gradually begin to be inundated permanently. Over a long-term period (to 2100), a 55-inch rise in sea level would substantially increase the probability of permanent beach and adjacent area inundation.

HAZARDOUS MATERIALS

Hazardous materials are widely used by commercial, industrial and institutional uses. Hazardous materials such as cleaners, paint, automotive and garden products, hobby supplies and swimming pool chemicals are also used in substantial quantities in residential areas. The improper use or disposal of all types of hazardous materials has the potential to result in adverse health, safety and environmental consequences. An emerging health and safety issue is the improper disposal

of pharmaceuticals, which when introduced into the environment can result in adverse human health and ecosystem impacts.

The areas in the City's coastal zone with the highest concentration of hazardous waste contamination sites, including leaking underground storage tank sites, are generally located in the commercial and industrial areas of the Waterfront/Harbor areas; along Cliff Drive in the Mesa area; and at and near the Airport. The areas of the City's coastal zone where hazardous material release sites are most commonly located are depicted on Figure 26, Hazardous Material Release Area Map, of the Safety Element Technical Background Report.

PUBLIC SAFETY

Aircraft Operations

The Santa Barbara Municipal Airport is owned and operated by the City of Santa Barbara and is located in an incorporated area of the City, about eight miles west of the Downtown area. The Airport is located within the historic boundaries of the Goleta Slough and land uses adjacent to the airport are predominately airport-related or open space. Other land uses have been developed in the vicinity of the Airport, including the University of California at Santa Barbara, and urban development located in the City of Goleta and unincorporated portions of the County of Santa Barbara.

The type and intensity of future development that may occur on City property at and adjacent to the Airport is controlled by several land use planning programs, including the requirements of the Airport Zoning Ordinance, Title 29 of the Municipal Code; the *Airport Industrial Area Specific Plan*; *City of Santa Barbara Coastal Plan for the Airport and Goleta Slough*, and the *Aviation Facilities Plan*. In addition, future land uses on Airport property would be required to comply with the standards established by the most-current version of the *Airport Land Use Plan*, as well as FAA and other applicable regulations.

Hazardous Material Transport

U.S. 101 and the Union Pacific Railroad extend through Santa Barbara from east to west and are located within or adjacent to the City's coastal zone. Both U.S. 101 and the railroad tracks are used for the transport of hazardous materials. The City has limited control over the volume and type of materials transported along these major transportation corridors and it can be expected that various types of hazardous materials, including explosives, compressed and liquefied gasses, petroleum products, agricultural chemicals, industrial chemicals, military ordinance, radioactive material and hazardous wastes will pass through the City on a regular basis. The potential for a spill or leak to occur while hazardous materials are being transported through the City is very low, however, the consequences of such an event has the potential to be high.

Natural Gas Pipelines

Risks to the public from natural gas pipelines result from the potential for an unintentional release, which can impact surrounding populations, property, and the environment. Although natural gas pipeline incidents are infrequent, such an event has the potential to result in significant consequences that may impact the general public.

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In the Santa Barbara area, the Southern California Gas Company is the natural gas utility company and operates a system of natural gas transmission and distribution lines. Transmission lines in the coastal zone are located along the Waterfront and on Airport property. The Gas Company implements a pipeline safety program and pipeline safety programs are also implemented by various state and federal agencies.

Electromagnetic Fields

Electric and magnetic fields are created by high voltage electricity transmission lines, distribution lines that bring electricity into structures, wiring within households, and by common household appliances that use electricity. The strength of electric and magnetic fields produced by electrical lines and appliances diminishes quickly as the distance from the source of the field increases. Recent scientific research has raised the possibility that exposure to electromagnetic fields can result in emotional, behavioral and reproduction effects. However, the greatest public concern regarding exposure to electromagnetic fields generally pertains to an increased risk of cancer. Although the results of studies regarding this issue vary, most studies have concluded that there is insufficient data to conclude that there is a cause and effect relationship between electromagnetic fields and cancer.

Most people are exposed to electromagnetic fields in their homes and workplaces, however, the highest potential exposure risk is often associated with major electrical utilities such as high voltage transmission lines and substations. These types of facilities are not located in the City's coastal zone. Therefore, no areas in the City's coastal zone are considered to have an elevated risk for this hazard.

EXISTING POLICIES

The City of Santa Barbara adopted the 2013 update to its Safety Element of the General Plan. This Element provides information regarding the hazards discussed in this section of the LCP. The following provides the adopted policies from the Safety Element Update. Each of the Safety Element policies listed below are applicable to the coastal zone. Policies also provide suggested implementation actions associated with carrying out the policy to reduce the risk of hazards to a level acceptable to the community.

EMERGENCY RESPONSE PLANNING

S1.0 Emergency Response Planning. Work cooperatively with federal, state, county and other local jurisdictions to promote a high level of readiness to respond to emergencies, update emergency response plans as needed, and to avoid and reduce the effects of disasters and emergencies on the City and its residents.

S2.0 Emergency Workforce. Work cooperatively with other jurisdictions in the South Coast Region to ensure that essential workers are available and ready to respond adequately and with timeliness in the event of a disaster.

Possible Implementation Actions to be Considered

S2.1 City Disaster Service Workers. Encourage city employees to have personal and family disaster plans and understand their role and responsibility as a disaster service worker.

S2.2 Public Education. Promote public education on emergency and disaster preparedness to enhance individual and overall community resilience.

S3.0 Consideration of People with Disabilities in Emergency Planning. Update evacuation plans and other emergency or contingency plans with provisions addressing the safety of people with special needs and disabilities.

S4.0 Incorporate Adaptation in Development. As applicable, private development and public facilities and services may be required to incorporate measures to adapt to climate change.

Possible Implementation Actions to be Considered

S4.1 Climate Change Adaptation. New public and private development or substantial redevelopment or reuse projects shall estimate the useful life of proposed structures, and, in conjunction with available information about established hazard potential attributable to climate change, incorporate adaptation measures in the design, siting, and location of the structures.

S4.2. Adaptation Guidelines. The City shall prepare adaptation guidelines for development projects, and to the extent of information available to the City, provide information about potential climate change hazards to developers.

S5.0 Community Resilience Planning. Participate in community resiliency planning processes to help improve initial local response/relief efforts, subsequent recovery phases of emergencies, and ongoing community self-sufficiency and sustainability.

Possible Implementation Actions to be Considered

S5.1 Plan products. Develop the following as part of resiliency planning efforts:

- a. Data base of maps and inventories of relief facilities, resources, businesses, and people that can help provide community relief during emergencies; the means for informing the public of resources data base; and a process for maintaining and updating data base information.
- b. An outline and example for development of neighborhood plans.
- c. An outline of additional community actions or projects for improvement to facilities, equipment, supplies, etc. that would benefit community resiliency (e.g., communications systems improvements).

S5.2 Plan process. Conduct the resilience planning process as a broad, cross-sector effort in coordination with the South Coast to engage public and institutional involvement, including:

- Public safety agencies
- Neighborhood groups
- Businesses, non-profit groups, and other non-governmental entities
- Health care facilities and practitioners (e.g., hospital, clinics)
- Relief supplies and volunteers (e.g., Red Cross, DRI)
- Hotels and Institutional facilities (e.g., schools; churches, Fairgrounds)
- Water, wastewater, waste management agencies/companies (including debris removal)
- Local agriculture, groceries, and restaurants
- Energy utilities and companies
- Transportation companies and agencies
- Communications companies
- Animal care facilities; funeral facilities; and other special needs facilities
- Local government departments and special districts (information systems; building & safety; animal control, vector control; etc.).

DEVELOPMENT REVIEW

S6.0 Hazard Reduction. Measures to reduce the effects of hazards to an acceptable level of risk shall be identified and evaluated during the development review process. The types

of measures to be considered and implemented include:

- a. Hazard avoidance
- b. Project design measures
- c. Compliance with regulations
- d. Implementation of mitigation measures

Possible Implementation Actions to be Considered

S6.1 Information Resources. Maps depicting areas that have been or may be affected by natural and human-caused hazards should be maintained by the City. These maps may be updated from time to time when new information regarding the location or severity of hazards becomes available.

S6.2 Risk Evaluation. Proposals for new development may be required to provide an evaluation of how natural and human-caused hazards may adversely affect the project, and to identify feasible measures to reduce hazard-related risk to an acceptable level. Required hazard evaluation reports are to be prepared and signed by a qualified individual acceptable to the City. At its discretion, the City may require peer review of submitted reports.

GEOLOGIC AND SEISMIC HAZARDS

S7.0 Fault Rupture. Avoid placing new structures for human occupancy across or adjacent to active or potentially active faults.

S8.0 Ground Shaking. Reduce the effects of earthquake ground shaking through appropriate building design requirements for new buildings and retrofit measures for existing buildings.

S9.0 Liquefaction. Foundation preparation recommendations identified by project-specific soils investigations shall be included in proposed building plans.

S10.0 Slope Failure. Discourage new development in areas where substantial slope movement has occurred in recent or historic times. Encourage development in areas designated as having a high or moderate slope failure risk to incorporate design and construction techniques that minimize slope failure risk to the extent feasible.

S11.0 Soil Erosion. Implement Best Management Practices to control the effects of erosion and sedimentation.

S12.0 Expansive Soil. Implement appropriate site preparation and structural design measures to minimize the effects of expansive soils.

S13.0 Radon. Encourage new or remodeled buildings intended for human occupancy located in areas that have a high potential for elevated radon concentrations to incorporate

appropriate control measures into the design of buildings.

S14.0 Geologic and Seismic Hazard Risk Reduction. Development projects shall implement design and mitigation measures to reduce the risk of damage or loss due to geological and seismic hazards to an acceptable level.

Possible Implementation Actions to be Considered

S14.1 Hazard Evaluations. Hazard evaluations may be required consistent with the recommendations of the *Geology and Geohazards Master Environmental Assessment, Technical Report and Evaluation Guidelines*.

S14.2 Fault Setbacks. Structures for human occupancy should typically be setback 50 feet from the location of a fault. This setback distance may be increased or decreased based on the recommendations of the site-specific fault evaluation that was conducted to determine the location of the fault.

S14.3 Utilities that Cross Faults. For linear utility infrastructure (e.g., water, sewer, gas pipelines) that must cross the location of a known fault, appropriate safety measures shall be provided.

S14.4 Building Code Updates. The City will minimize ground shaking-related hazards to structures by continuing to review, amend and adopt updated provisions of the California Building Code to incorporate and implement building design requirements.

S14.5 Unreinforced Masonry Buildings. Implement existing building retrofit programs that address structural deficiencies in existing buildings that have the potential to result in significant safety hazards during earthquakes.

S14.6 Seismic Strengthening. Promote and implement a prescriptive seismic strengthening program to reduce the potential for damage to existing structures that do not meet current building code requirements.

S14.7 Minimize the Effects of Soil Erosion. Minimize soil erosion at construction sites by implementing Best Management Practices, such as those identified by the City's Storm Water Management Program.

S14.8 Minimize the Effects of Expansive Soil. Minimize the effects of expansive soil through site modifications and/or building designs.

S15.0 Tsunami. New development in areas designated as a tsunami hazard zone shall be designed to minimize the potential for tsunami-related damage to the extent possible.

Possible Implementation Actions to be Considered

S15.1 New Building Design. New buildings located in the designated tsunami hazard zone should be designed to resist collapse and minimize the risk of death, injury or property damage should a tsunami occur.

S15.2 Minimize Open Storage Areas. Land uses within designated tsunami hazard areas that require extensive areas of open storage should be discouraged to reduce the amount of debris that may be generated by a tsunami.

S15.3 Minimize Structural Damage. To the extent feasible, divert water to acceptable locations using structures such as walls, compacted terraces and berms, and parking structures.

S16.0 Seiche. Potential seiche hazards shall be considered during the design and environmental review of new development located adjacent to the Harbor.

Possible Implementation Actions to be Considered

S16.1 Appropriate Structure Setbacks. New development located at the Harbor should, to the extent feasible, provide appropriate setbacks that minimize the potential for inundation from seiche waves.

S17.0 High Groundwater. Development in areas with known high groundwater conditions, or where historic high groundwater levels could return to previous high levels, shall be required to implement appropriate control measures and/or be designed to minimize high groundwater-related effects to the project.

Possible Implementation Actions to be Considered

S17.1 Minimize the Effects of High Groundwater. Proposed building projects located in areas with existing or historic high groundwater conditions should determine a “design groundwater elevation” based on a review of current and historic groundwater level data and provide measures to minimize the potential for adverse effects.

S18.0 Sea Cliff Retreat. Buildings intended for human occupancy shall be designed and located so that erosion of the sea cliff will not be substantially increased by the project; and the building will not be adversely affected by sea cliff retreat for a minimum period of 75 years, the typical useful life of a new building.

S19.0 New Structure Design. New bluff-top structures shall be located and designed to minimize adverse effects to the bluff (e.g., a substantial increase in water percolation, weight placed near the bluff edge, or drainage over the bluff face).

Possible Implementation Actions to be Considered

S19.1 Structure Setback from the Bluff Edge. The required setback from the bluff edge shall be determined by an analysis that includes the most recent methodology used by the Coastal Commission. Modifications to the prescribed setback calculation methodology may be implemented pending concurrence by the City to reflect site-specific geological conditions.

California Coastal Commission Guidelines for determining the required setback from the bluff edge are provided in Appendix B of the *Safety Element Technical Background Report*.

S19.2 Bluff Top Drainage. All new development of bluff top land shall have drainage systems carrying run-off away from the bluff to the nearest public street. In areas where the landform makes landward conveyance impossible, and where additional fill or grading is inappropriate or cannot accomplish landward drainage, private bluff drainage systems may be permitted if:

- a. They are sized to accommodate run-off from all similarly drained parcels bordering the subject parcel's property lines;
- b. The owner of the subject property allows for the permanent drainage of those parcels through his/her property;
- c. The drainage system is designed to be minimally visible on the bluff face.
- d. The drainage system is designed and constructed to operate properly with only minimal maintenance requirements.

S20.0 Sea Cliff Retreat. All development, redevelopment, renovations and additions on bluff-top parcels shall consider the effects of sea cliff retreat over the life of the project. The potential effects of climate change on sea cliff retreat rates shall also be considered.

Possible Implementation Action to be Considered

S20.1 Sea Cliff Development Guidelines. The following guidelines shall be used for development on sea cliffs.

- a. Bluff setbacks shall be adequate to address long-term erosion and slope stability issues.
- b. New development on top of a cliff shall be placed at a distance away from the edge of the cliff, such that potential accelerated rates of erosion and cliff material loss associated with climate change-induced sea level rise, or an area- or site-specific geologic investigation that accounts for climate change, will minimize sea cliff-related impacts, and not seriously affect the structure during its expected lifetime.
- c. The design life of new structures is presumed to be a minimum of 75 years. Exact future rates of accelerated sea cliff retreat are unknown and will vary

among location and over time, but are currently estimated to average 12 inches per year, potentially accelerating to 1 to 3 feet per year if sea level rise progresses. Site-specific sea cliff retreat data derived from historical aerial photo review may be considered during the review of likely future project-specific sea cliff retreat impacts. Site-specific estimates of sea cliff retreat rates are to be prepared by a Registered Geologist, Engineering Geologist or other similarly qualified individual, and are subject to approval by the City.

- d. The City recognizes the need for owners of threatened coastal properties to perform maintenance and modest improvements to threatened principal structures (primary living quarters, main commercial buildings, and functionally necessary appurtenances to those structures, such as septic systems and infrastructure) and other facilities. The City's goal is to minimize exposure of substantial new improvements to hazards of bluff retreat and avoid the need for installation of environmentally harmful coastal protection structures that could be requested to protect such improvements. To meet these goals, the following guidelines apply:

- (1) Protection for existing structures shall first focus on techniques that avoid use of coastal protection structures including use of non-intrusive techniques such as drainage control, installation of drought tolerant landscaping, construction of cantilevered grade beam foundations, etc.
- (2) Demolition or relocation of threatened principal structures and facilities further inland on parcels shall be favored over installation of coastal protection structures.
- (3) Coastal protection structures shall not be allowed for the sole purpose of protecting accessory structures (e.g., garages, carports, storage sheds, decks, patios, walkways, landscaping).
- (4) The siting of new major improvements shall consider accelerated rates of sea cliff retreat associated with climate change-induced sea level rise as projected by the State of California, or an area- or site-specific geologic investigation that accounts for climate change.

S20.2 Shoreline Management Plan. Develop a comprehensive Shoreline Management Plan to identify, manage and to the extent feasible, mitigate or reduce climate change-induced sea level rise impacts upon public facilities and private property along the City Shoreline. The City should continue coordination with local and regional entities such as the Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), the County, other South Coast cities, and UCSB to manage coastal issues including:

- a. Protection/restoration of natural sand transport and sand supply replenishment projects;

- b. Natural bluff restoration, stabilization and erosion control measures;
- c. Non-intrusive methods to slow sand transport and retain sand along the beaches that form the City's bluffs; and
- d. Funding mechanisms to implement beach replenishment and methods to reduce bluff retreat.

S20.3 Minimize Impacts to Sea Cliffs. In an attempt to impede the sea cliff retreat process, programs to control or prohibit the following activities that can significantly alter the rates of sea cliff erosion and retreat should be implemented.

- a. **Improper Access.** Improper access may be discouraged by providing existing, established official beach access routes with additional parking, improved access facilities, and publicizing their locations. The use of unmaintained, improvised access routes that have the potential or are creating a serious erosion problem should be discouraged. This could be done by posting informational signs at the top of the cliff near the access route, describing the adverse effects that improper access can cause and where the nearest maintained access routes are located. The City will also pursue appropriate enforcement actions if new paths are created on coastal bluffs.
- b. **Loading.** Development that will add adverse amounts of excessive weight to the top of the cliff (*e.g.*, large structures, swimming pools, artificial fill, etc.) should be discouraged.
- c. **Improper Vegetation.** Where feasible, existing non-native vegetation that requires large amounts of water, such as ice plant and annual grass, should be replaced with native vegetation.
- d. **Trash Disposal.** The disposal of any material onto the face of the cliff, including brush clippings from landscape vegetation, shall be prohibited.

S21.0 Development on the Bluff Face. With the exception of drainage systems identified in Implementation Action S19.2, no development shall be permitted on the bluff face except for engineered staircases or access ways to provide public beach access and pipelines for scientific research or coastal dependent industry. To the maximum extent feasible, these structures shall be designed to minimize alteration of the bluff and beach.

FIRE HAZARDS

S22.0 Fire Hazard Reduction. Adverse effects of fire hazards shall be reduced to the extent feasible through hazard avoidance, project design measures, compliance with regulations,

and the implementation of mitigation measures as part of the development review and permitting process.

Possible Implementation Action to be Considered

S22.1 Evacuation Route Evaluation. The Fire Department should evaluate the effectiveness of existing and proposed fire emergency evacuation routes, and develop standardized mitigation measures that can be applied to projects to minimize their project-specific and cumulative evacuation-related impacts.

S22.2 Fire Department Tactical Areas. To increase fire fighter safety during wildfire emergencies, new development and major redevelopment proposals located in designated high fire hazard areas should be reviewed to assess the potential for the project to provide on-site fire suppression tactical areas, such as staging areas, safety zones and escape routes. Fire suppression tactical areas should be provided consistent with standards to be developed by the Fire Department.

S22.3 Hazard Reduction Design Requirements. Project designs shall adequately address fire hazard, providing for appropriate site layout; building design and materials; fire detection and suppression equipment; landscaping and maintenance; road access and fire vehicle turnaround; road capacity for evacuation; and water supply.

S22.4 Education and Training. The Fire Department shall continue working with the Planning Commission, Design Review Boards, and development review staff to enhance understanding and appropriate application of measures to reduce fire hazard.

S23.0 Defensible Space. Require that defensible space be provided around existing and proposed development projects located in high fire hazard areas in accordance with requirements specified by the *Wildland Fire Plan*, or as recommended by the Fire Department.

S24.0 Vegetation Management. Vegetation management programs to reduce fire fuel loads, as well as project-related landscape and maintenance plans, shall balance fire risk reduction benefits with possible aesthetic, habitat and erosion impacts. Impacts that have the potential to result from fuel management activities shall be avoided or reduced to the maximum extent possible.

S25.0 Fire Hazard Risk Reduction. The City will continue to implement programs that reduce the risk of wildland and structure fires, and that minimize the short- and long-term effects of fires that do occur.

Possible Implementation Actions to be Considered

S25.1 Wildfire Risk Reduction. Continue to implement risk reduction measures

identified by the *Wildland Fire Plan*.

S25.2 Limit Residential Development in High Fire Hazard Areas. Land use map designations limit residential density in High Fire Hazard Areas. Offer incentives and/or an option for property owners to transfer development rights from the High Fire Hazard Area to the High Density residential land use designations.

S25.3 Wildland Fire Suppression Assessment District. Continue to implement wildfire risk reduction programs facilitated by the Wildland Fire Suppression Assessment District, such as vegetation management and homeowner assistance programs.

S25.4 Coordination. Continue to coordinate fire risk prevention, management, response, recovery and public education programs with the County of Santa Barbara, Montecito Fire Protection District, U.S. Forest Service, California Emergency Management Agency, CAL FIRE, Federal Emergency Management Agency and other agencies.

S26.0 Post Fire Recovery. Rebuilding that occurs in designated high fire hazard shall incorporate all applicable design measures that reduce the risk of future fire-related impacts. Expedited project review and permitting shall occur as determined by the Community Development Director.

S27.0 Building Code Updates. Periodically adopt amendments or updated provisions of the California Building Code as appropriate to implement new building design measures that minimize fire hazards to structures.

S28.0 Fire Prevention and Creek Restoration. Coordinate fire prevention and vegetation management activities with creek and riparian resource protection by developing and implementing Best Management Practices for vegetation/fuel management operations conducted within and adjacent to creek corridors.

Possible Implementation Actions to be Considered

S28.1 Vegetation Management Practices. Guidelines should be developed for conducting fuel management activities in creek areas. At minimum, the guidelines should include the following parameters:

- a. Describe conditions that warrant vegetation management activities within or adjacent to creek banks.
- b. Provide standard measures to minimize impacts to wetland and riparian habitat.
- c. Standards for when vegetation management operations may be conducted to minimize the potential for impacts to nesting birds and sensitive species.
- d. Requirements to prepare site-specific evaluations/vegetation management

plans for fuel management operations that are planned to occur within or adjacent to sensitive habitat areas.

- e. Requirements regarding when a Streambed Alteration Agreement (Fish and Game Code 1601) from the California Department of Fish and Wildlife is required prior to the implementation of the vegetation management work.
- f. Standard mitigation measures to be implemented if planned vegetation management operations would have the potential to result in significant direct or indirect impacts to sensitive habitat, species or water quality.

S29.0 Water System Improvements for Fire Fighting. Evaluate the potential for additional water system improvements to assist in emergency preparedness and incorporate feasible measures into the City Capital Improvement Plan.

S30.0 Private Water Supplies for Fire Fighting. Encourage and assist homeowners in High Fire Hazard Areas to install their own emergency water supplies to support fire fighting operations. Assistance could include expedited permit review.

FLOOD HAZARDS

S31.0 Development in Flood Hazard Areas. Avoid placing new public and private development, substantial redevelopment or reuse projects in locations that would obstruct flood flow within a designated floodway area.

S32.0 Localized Drainage Impacts. New public and private development or substantial redevelopment or reuse projects located in areas outside a designated 100-year floodplain, but in areas known to have experienced repeated property damage due to poor storm water drainage, shall not contribute to existing drainage impacts by substantially increasing runoff volume or flow rates, or displacing runoff onto adjacent properties.

S33.0 Floodplain Mapping Update. Coordinate with FEMA to update the Flood Insurance Rate Map (FIRM) floodplain boundaries for Special Flood Hazard Areas such as the Mission and Sycamore creek drainages and Area A near the Estero.

S34.0 Dam Inundation. Potential dam inundation hazards to new development located downstream of the Lauro Reservoir shall be considered during the development review process.

S35.0 Sea Level Rise. Monitor, assess and adapt to changes in stream and coastal flooding characteristics that may occur due a global climate change induced rise in sea level.

Possible Implementation Actions to be Considered

S35.1 Monitoring, Data Collection, and Analysis of Sea Level Rise. Develop the following data and analysis to support future sea level rise risk assessment, vulnerability analysis, and adaptation planning.

- a. **Tide gauge.** Protect ongoing functioning of the NOAA tide gauge at the Santa Barbara breakwater to establish a long-term monitoring record of sea level changes.
- b. **Sea cliff monitoring.** Establish a sea cliff monitoring program with surveyed transects that can be regularly monitored to document and track rates of cliff retreat.
- c. **Beach profiles.** Establish a set of beach profiles (spaced at about 500 feet) from Leadbetter Beach to the Clark Estate, and a set of winter and summer profiles from Cabrillo Boulevard to the shoreline, for annual surveys to track seasonal and long-term changes.
- d. **Flooding and inundation.** Obtain detailed topographic mapping of low-lying areas of the City and the Airport (accurate to at least 12 inches, such as from State LiDAR satellite survey), and develop projected future flooding and inundation area maps to assist future adaptation planning.

S35.2 Sea Level Rise Risk Assessment and Vulnerability Analysis. Conduct periodic sea level rise studies that provide risk analysis indicating probability and magnitude of future impacts to Santa Barbara due to sea level rise to support future adaptation planning. Consider effects associated with storm flooding, beach and cliff erosion, and permanent inundation. Consider short-term effects (from storms), intermediate-term effects (to 2050), and long-term effects (to 2100).

S35.3 Sea Level Rise Adaptation. Identify policy options, costs, and consequences for addressing sea level rise issues, including:

- a. Techniques to minimize wave energy and damage from storm surges, while minimizing disruption of coastal activities and habitats.
- b. Review of City public improvements and utilities for potential consequences of sea level rise, and consideration of means of adaptation such as measures to protect in place, raising facilities above projected flood heights, and managed retreat or relocation of facilities.
- c. Coordination with private property owners along the waterfront on techniques for structural adaptation and new design.

S36.0 Future Inundation. Consider the following options in the development of adaptation plans for future permanent inundation effects:

- a. Establishing mandatory rolling setbacks that move landward over time for future development or significant redevelopment in areas likely to be affected by sea level rise inundation within the expected lives of the structure.
- b. Restricting rebuilding when structures are substantially damaged by sea level rise inundation and coastal storms.

- c. Developing policies and identifying funding or tax incentives to relocate away from areas subject to future sea level rise inundation.
- d. Evaluating the costs, impacts, and estimated lifespan of a seawall along Cabrillo Boulevard and Shoreline Drive.

HAZARDOUS MATERIALS

S37.0 Hazardous Materials Exposure. Seek to provide facilities and guidance so that new development and redevelopment projects avoid exposure to hazardous materials and provide for their safe disposal.

Possible Implementation Actions to be Considered

S37.1 Household Hazardous Materials and Wastes. Coordinate with other South Coast jurisdictions and the waste management industry to develop additional household hazardous waste collection facility capacity on the South Coast.

S37.2 Pharmaceutical Waste. Coordinate with other South Coast jurisdictions and the waste management industry to develop additional opportunities for residents to properly dispose pharmaceutical waste.

S38.0 Exposure Risk Reduction. The City shall continue to investigate ways to facilitate hazardous waste site remediation, protect public health, and minimize environmental impacts resulting from the presence of waste material and from remediation activities.

S39.0 Integrated Pest Management. The City shall encourage new and existing development projects to implement integrated pest management strategies that reduce the use of pesticides.

PUBLIC SAFETY

S40.0 Electromagnetic Field Development Setbacks. Continue application of prudent avoidance policy in siting development near transmission lines with adequate setbacks.

Possible Implementation Actions to be Considered

S40.1 Monitor Electromagnetic Field Study. Continue to monitor scientific study of electromagnetic fields and update development policies as necessary.

S41.0 Natural Gas Transmission and Distribution Pipelines. New development shall provide adequate setbacks from natural gas transmission and distribution pipelines to facilitate pipeline maintenance activities.

S42.0 Airport Safety. New development at the Airport shall be evaluated for compliance with the safety requirements of FAA regulations, the Santa Barbara County *Airport Land Use Plan*, and the City of Santa Barbara *Airport Master Plan*.

S43.0 Hazardous Substance Transportation. Potential health and safety impacts that could occur as a result of a hazardous substance release shall be evaluated during the environmental review of projects located adjacent to U.S. Highway 101 and the Union Pacific railroad tracks.